

CLAIMS

What is claimed is:

1. An apparatus for directing a gas from an upstream conduit through a vessel wall for cleaning surfaces within the vessel comprising:
 - a mounting flange for coupling the apparatus to the upstream conduit delivering the gas and having:
 - first and second faces;
 - an inboard surface bounding a central aperture;
 - an outboard perimeter; and
 - an array of bolt holes between the first and second faces;
 - a conduit extending downstream from the flange and having:
 - inner and outer walls along at least a portion of a length; and
 - a space between the inner and outer walls for carrying a cooling fluid;
 - a cooling fluid inlet; and
 - a cooling fluid outlet.
2. The apparatus of claim 1 wherein:
 - the space extends from an upstream end outside the vessel wall at least partially downstream within the wall.
3. The apparatus of claim 1 wherein:
 - the cooling fluid outlet is along the conduit; and
 - the cooling fluid inlet is along the flange.
4. The apparatus of claim 3 wherein:
 - the inner and outer walls each have a downstream rim; and
 - the cooling fluid outlet is between the inner and outer walls.
5. The apparatus of claim 1 wherein:
 - the inner wall is essentially formed by a first tubular piece extending from an upstream rim to a downstream rim and having interior and exterior surfaces, along an upstream portion, the interior surface providing the flange inboard surface.
6. The apparatus of claim 1 in combination with:

said vessel, being a furnace, having a furnace wall separating a furnace exterior from a furnace interior and having a wall aperture; and
a detonative source of said gas.

7. The combination of claim 6 wherein:
the flange is upstream of an exterior surface of the furnace wall; and
the conduit extends through the furnace wall to protrude downstream of an interior surface of the furnace wall.
8. A soot blower nozzle comprising:
means for mounting the nozzle to an upstream soot blower gas conduit;
a surface for guiding gas from the soot blower gas conduit into the interior of the vessel; and
means for cooling the nozzle.
9. A method for operating an apparatus for cleaning interior surfaces within a vessel having a vessel wall, the method comprising:
causing a combustion pulse in a combustion conduit;
directing combustion gases along the combustion conduit through the vessel wall to be ejected from an outlet of the combustion conduit; and
passing a cooling gas along a portion of the combustion conduit exposed to heat from the vessel.
10. The method of claim 9 wherein:
said passing is essentially continuous between a plurality of said combustion pulses.
11. The method of claim 9 wherein:
said passing comprises passing the cooling fluid along a path at least partially surrounding a portion of a combustion gas flowpath.
12. The method of claim 9 wherein:
said passing comprises passing the cooling fluid along a path into the vessel interior.